TENNESSEE DEPARTMENT OF EDUCATION
FIRST TO THE TOP

Construction Practicum

Primary Career Cluster:	Architecture & Construction
Consultant:	Rachel Allen, (615) 532-2835, Rachel.Allen@tn.gov
Course Code:	6160
Prerequisite(s):	Minimum of 2 credits in an Architecture & Construction program of study.
Credit:	1
Grade Level:	12
Graduation Requirement:	This course satisfies one of three credits required for an elective focus when taken in conjunction with other Architecture & Construction courses.
Programs of Study and Sequence:	This is the fourth course in the *Residential & Commercial Construction*, *Structural Systems,* and *Mechanical, Electrical, and Plumbing Systems* programs of study.
Aligned Student Organization(s):	SkillsUSA: http://site1.tnskillsusa.com/ Brandon Hudson, (615) 532-2804, Brandon.Hudson@tn.gov
Coordinating Work-Based Learning:	Teachers who hold an active WBL certificate may offer placement for credit when the requirements of the state board's WBL Framework and the Department's WBL Policy Guide are met. For information, visit http://tn.gov/education/cte/work_based_learning.shtml.
Available Student Industry Certifications:	http://www.tn.gov/education/cte/ArchitectureConstruction.shtml
Dual Credit or Dual Enrollment Opportunities:	There are no known dual credit/dual enrollment opportunities for this course. If interested in developing, reach out to a local postsecondary institution to establish an articulation agreement.
Teacher Endorsement(s):	501, 502, 522, 523, 524, 527, 532, 553, 554, 555, 556, 567, 575, 580, 584, 585, 592, 598, 701, 702, 703, 705, 706, 707
Required Teacher Certifications/Training:	If students are assigned in work-based learning settings, teachers must attend WBL training and earn the WBL Certificate provided by the Tennessee Department of Education.
Teacher Resources:	http://www.tn.gov/education/cte/ArchitectureConstruction.shtml

Course Description

Construction Practicum is a capstone course intended to provide students with the opportunity to apply the skills and knowledge learned in previous Architecture & Construction courses within a professional, working environment. In addition to developing an understanding of the professional and ethical issues

encountered by tradesmen and contractors in the workplace, students learn to refine their skills in problem solving, communication, teamwork, and project management in the completion of a course-long project. Due to the importance of on-the-job training in the construction industry, a principle aim of the practicum is to assist students with placements where on-the-job training occurs, if available, so they can begin to log hours on a worksite and gain experience prior to entering the job market, such as in pre-apprenticeships. Additionally, students are exposed to the great range of postsecondary opportunities in today's construction fields as well, in order to prepare them to make an informed decision regarding their post-high school plans.

The course is highly customizable to meet local system needs. Instruction may be delivered through work-based learning arrangements such as internships, cooperative education, service learning, mentoring, and job shadowing or through school laboratory training with industry-driven project-based learning. For all projects undertaken in this course, students are expected to continue building skills related to their chosen program of study (*Residential & Commercial Construction, Structural Systems, or Mechanical, Electrical, & Plumbing Systems*), while also refining skills previously acquired to achieve deeper levels of mastery. In the course, students may pursue additional training and certification in a specialized area such as masonry, concrete, electricity, plumbing, HVAC, or carpentry. Upon completion of the practicum, proficient students will be prepared to pursue further study in architecture or construction, or seek additional training and employment with the aid of a portfolio documenting student work completed throughout high school. Standards in this course are aligned with Tennessee State Standards for English Language Arts & Literacy in Technical Subjects, and Tennessee State Standards in Mathematics.*****

Work-Based Learning Framework

Practicum activities may take the form of work-based learning (WBL) opportunities (such as internships, cooperative education, service learning, and job shadowing) or industry-driven project-based learning. These experiences must comply with the Work-Based Learning Framework guidelines established in SBE High School Policy 2.103. As such, this course must be taught by a teacher with an active WBL Certificate issued by the Tennessee Department of Education and follow policies outlined in the Work-Based Learning Policy Guide available online at http://www.tn.gov/education/cte/work_based_learning.shtml. The Tennessee Department of Education provides a *Personalized Learning Plan* template to ensure compliance with the Work-Based Learning Framework, state and federal Child Labor Law, and Tennessee Department of Education policies, which must be used for students participating in WBL opportunities.

Program of Study Application

This is the fourth course in the *Residential & Commercial Construction*, *Structural Systems,* and *Mechanical, Electrical, and Plumbing Systems* programs of study. For more information on the benefits and requirements of implementing these programs in full, please visit the Architecture & Construction website at http://www.tn.gov/education/cte/ArchitectureConstruction.shtml.

Course Standards

Safety

1) Identify safety hazards on a jobsite and demonstrate practices for safe working. Accurately read, interpret, and demonstrate adherence to safety rules, including but not limited to rules pertaining to electrical safety, Occupational Safety and Health Administration (OSHA) guidelines, and state and national code requirements. Be able to distinguish between the rules and explain why certain rules apply. Recognize and employ universal construction signs and symbols such as colors, flags, stakes, and hand signals that apply to construction workplace situations. (TN Reading 3, 4, 6)

2) Maintain safety records and demonstrate adherence to industry-standard practices regarding general machine safety, tool safety, equipment safety, electrical safety, and fire safety to protect all personnel and equipment. For example, when operating tools and equipment, regularly inspect and carefully employ the appropriate personal protective equipment (PPE), as recommended by Occupational, Safety & Health Administration (OSHA) regulations. Incorporate safety procedures when operating tools and equipment, such as hand and power tools, ladders, scaffolding, and lifting equipment. Complete safety test with 100 percent accuracy. (TN Reading 3, 4)

3) Follow procedures to work safely around materials. Adhere to responsibilities for employees in material safety as outlined by the Hazard Communication Standard (HazCom), such as locating and interpreting material safety data sheets (MSDS). Demonstrate safe procedures to move materials by planning the movement, properly lifting, stacking, and storing materials, and selecting proper materials-handling equipment. (TN Reading 3, 4)

4) Research state and national laws governing workplace injuries, particularly those common to the construction industry. In preparation for a future career in construction, outline the necessary procedures to follow if an injury is sustained on the job; in particular, explain the responsibilities of managers, supervisors, and the injured parties in the event of an emergency, including incident reporting after the event. Practice explaining the process of securing workers compensation benefits as if assisting a co-worker or subordinate. (TN Reading 1, 2, 8)

Postsecondary and Career Preparation

5) Research the range of credentials one can earn with advanced study of construction at the postsecondary level (i.e., apprenticeship, technical certification, BA, BS, MBA, etc.). Investigate both in-state and out-of-state postsecondary programs in a variety of construction fields, including but not limited to construction management, construction science, architecture, landscape design, civil engineering, and more. Synthesize research conducted in previous Architecture & Construction courses to update the portfolio career plan to achieve post-high school goals. (TN Reading 5, 7, 9; TN Writing 4, 6, 8, 9)

6) Research and select a company or organization for a project in a construction field. Cite specific textual evidence from the organization's literature, as well as independent news articles, to summarize:

a. The mission and history of the organization
b. Headquarters and organizational structure
c. Products or services provided
d. Credentials required for employment and how they are obtained and maintained
e. Policies and procedures
f. Reports, newsletters, and other documents published by the organization
g. Website and contact information

(TN Reading 1, 2; TN Writing 4, 7)

7) Search for the resumes of construction professionals retrieved from the websites of companies, organizations, or professional networks. Discuss what is typically included in the resumes of these professionals, compare and contrast several examples, and create a personal resume modeled after elements identified in the search. (TN Reading 1, 4, 5, 6; TN Writing 4)

8) Simulate the experience of conducting a job search by researching local employment options. In preparation for a future career in construction, complete an authentic job application form and compose a cover letter following guidelines specified in the vacancy announcement. (TN Reading 7; TN Writing 4)

9) Participate in a mock interview. Prior to the interview, research tips on dress and grooming, most commonly asked interview questions, appropriate conduct during an interview, and recommended follow-up procedures. Highlight sample work compiled in the portfolio that illustrates mastery of specific skills attained in the program of study. Upon completion of the interview, write a thank you letter to the interviewer in a written or email format. (TN Reading 2; TN Writing 2, 4, 7, 9)

Transferring Course Concepts to Practicum

10) Apply skills and knowledge from previous courses in an authentic work-based learning internship, job shadow, or classroom-based project. Where appropriate, develop, practice, and demonstrate skills outlined in previous courses. (TN Reading 2, 3)

11) As part of a course project, develop a comprehensive project plan, appropriate to the project type, to guide all work. The plan should include at minimum the following:
    a. Material list
    b. Cost estimation/Mock bid package
    c. Criteria and constraints
    d. Project schedule
    e. Inspection checklist
    f. Applicable contracts
    g. Minutes from project meetings and other documentation
    h. Contingency plan in case of delay or emergency
    i. Justification for major design and budgeting decisions made

    Collaboratively update the plan to reflect unexpected changes in conditions or capacity. For example, demonstrate the ability to reschedule an activity if there is a delay in the arrival of materials. (TN Reading 3, 4, 7, 9; TN Writing 1, 4, 5, 7)

12) Create and continually update a personal journal to document skills learned during the practicum and draw connections between the experience and previous course content by reflecting on:
    a. Tasks accomplished and activities implemented
    b. Positive and negative aspects of the experience
    c. How challenges were addressed
    d. Team participation in a learning environment
    e. Comparisons and contrasts between classroom and work environments
    f. Interactions with colleagues and supervisors
    g. Personal career development
    h. Personal satisfaction

    (TN Writing 2, 4)

Business Skills and Project Management

13) In teams, develop and successfully implement a suite of project management tools and processes to aid in the completion of the course project. (If participating in a work-based learning experience, apply tools and processes to satisfy placement requirements.) Demonstrate the ability to divide roles and responsibilities among team members, track progress toward goals, and satisfy client specifications as would a construction manager or contractor. For example, assign tasks and monitor deliverables using a Gantt chart or other tracker.

Portfolio

14) Update materials from coursework to add to the portfolio started in *Fundamentals of Construction* to illustrate mastery of skills and knowledge outlined in the previous courses and applied in the practicum. The portfolio should reflect thoughtful assessment and evaluation of the progression of work involving the application of project management skills specific to the construction industry. The following documents will reside in the career portfolio:
    a. The career plan developed and revised in prior courses
    b. Resume
    c. List of responsibilities undertaken through the course
    d. Examples of visual materials used during the course (such as diagrams, schematics, and site plans) and artifacts of project outcomes (such as photographs of various stages of a construction project)
    e. Periodic journal entries reflecting on tasks and activities
    f. Feedback from instructor and/or supervisor based on observations
    g. Transcripts or other evidence of certifications obtained throughout the program of study

    (TN Writing 4, 5)

Communication of Project Results

15) Apply all steps of the construction process to successfully build a structure and/or install a system(s) as outlined in the course project plan. Demonstrate the ability to communicate results over the course of the project's duration. Produce a technical report documenting the progress of the project and evaluating the final product. (TN Reading 3, 7, 9; TN Writing 2, 4, 5, 6, 7, 9)

16) Upon completion of the practicum, develop a technology-enhanced presentation showcasing highlights, challenges, and lessons learned from the experience. The presentation should be delivered orally, but supported by relevant graphic illustrations, such as diagrams, drawings, videos, photographs, and/or guided tours of the finished structure or product. Throughout the presentation, justify construction decisions and assess the quality of the work. Prepare the presentation in a format that could be presented to both a technical and a non-technical audience, as well as for a career and technical student organization (CTSO) competitive event. (TN Reading 1, 3, 7, 9; TN Writing 2, 4, 5, 6, 9)

Standards Alignment Notes

*References to other standards include:

- TN Reading: Tennessee State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects; Reading Standards for Literacy in Science and Technical Subjects 6-12; Grades 11-12 Students (page 62).
    - Note: While not directly aligned to one specific standard, students who are engaging in activities outlined above should be able to also demonstrate fluency in Standard 10 at the conclusion of the course.
- TN Writing: Tennessee State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects; Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-12; Grades 11-12 Students (pages 64-66).
    - Note: While not directly aligned to one specific standard, students who are engaging in activities outlined above should be able to also demonstrate fluency in Standards 3 and 10 at the conclusion of the course.
- TN Math: Tennessee State Standards for Mathematics; Math Standards for High School: Numbers and Quantity, Algebra, Geometry.
    - Note: The standards in this course are not meant to teach mathematical concepts. However, the concepts referenced above may provide teachers with opportunities to collaborate with mathematics educators to design project-based activities or collaborate on lesson planning. While not aligned to one specific conceptual category, students who are engaging in the activities outlined above should be able to demonstrate quantitative, algebraic, and geometric reasoning as applied to specific technical concepts. In addition, students will have the opportunity to practice the habits of mind as described in the eight Standards for Mathematical Practice.
- P21: Partnership for 21st Century Skills Framework for 21st Century Learning
    - Note: While not all standards are specifically aligned, teachers will find the framework helpful for setting expectations for student behavior in their classroom and practicing specific career readiness skills.